

Remarks/Arguments

A. Pending Claims

Claims 413-466, 490-492, 726, and 730 are pending. Claims 413, 414, 424, 433, 443, 459, 460, 465, 490, 491, and 726 have been amended.

B. Oath/Declaration

Applicant submits that the Declaration submitted on January 23, 2001 is not defective. Applicant submits that the change in address on the Declaration complies with 37 CFR 1.52(c). Applicant respectfully submits that Damon Borich's dated signature on the Declaration was both an acknowledgement of the Declaration and the change to Damon Borich's address. Applicant requests that the Declaration be accepted.

C. Double Patenting

The Examiner rejected or provisionally rejected the claims of the present application over: U.S. Patent No. 6,602,702; U.S. Patent No. 6,680,206; U.S. Patent No. 6,713,298; U.S. Patent Application No. 09/775,342; U.S. Patent Application No. 09/775,344; and U.S. Patent Application No. 10/427,744. Applicant does not believe that a terminal disclaimer is necessary for the present application, but in the interest of expediency, a terminal disclaimer over the above noted patents and patent application has been submitted.

C. The Claims Are Not Indefinite Pursuant to 35 U.S.C. § 112, second paragraph

Claims 413-466, 490-492, 726, and 730 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant respectfully disagrees that the claims are indefinite.

The Office Action stated that:

[w]ith respect to claims 413, 414, 459-460, 490, and 726, it is unclear what would be required for the particles to be configured to produce the signal in the presence of analytes...It is unclear if so sort of binding or reaction is involved, or if the particles merely must be capable of producing a signal even in the presence of phosphate functional groups or bacteria. (Office Action, page 3)

Claims 413, 414, 459, 460, and 726 have been amended for clarification. Applicant's Specification states:

The sensor array, in some embodiments, is formed of a supporting member which is configured to hold a variety of chemically sensitive particles (herein referred to as "particles") in an ordered array. The particles are, in some embodiments, elements which will create a detectable signal in the presence of an analyte. The particles may produce optical (e.g., absorbance or reflectance) or fluorescence/phosphorescent signals upon exposure to an analyte. Examples of particles include, but are not limited to functionalized polymeric beads, agarous beads, dextrose beads, polyacrylamide beads, control pore glass beads, metal oxides particles (e.g., silicon dioxide (SiO₂) or aluminum oxides (Al₂O₃)), polymer thin films, metal quantum particles (e.g., silver, gold, platinum, etc.), and semiconductor quantum particles (e.g., Si, Ge, GaAs, etc.). (Applicant's Specification, page 7, lines 20-29); and

A particle, in some embodiments, possess both the ability to bind the analyte of interest and to create a modulated signal. The particle may include receptor molecules which possess the ability to bind the analyte of interest and to create a modulated signal. Alternatively, the particle may include receptor molecules and indicators. The receptor molecule may possess the ability to bind to an analyte of interest. Upon binding the analyte of interest, the receptor molecule may cause the indicator molecule to produce the modulated signal. The receptor molecules may be naturally occurring or synthetic receptors formed by rational design or combinatorial methods. Some examples of natural receptors include, but are not limited to, DNA, RNA, proteins, enzymes, oligopeptides, antigens, and antibodies. Either natural or synthetic receptors may be chosen for their ability to bind to the analyte molecules in a specific manner. (Applicant's Specification, page 9, lines 5-14).

Applicant submits that claims 413, 414, 459-460, 490, and 726 are definite. Applicant respectfully requests removal of the rejections to the claims.

The Office Action stated “[w]ith respect to claim 424, it is unclear what structural elements or modifications would be required to configure the cover layer to allow fluid to pass through the cover layer.” Applicant respectfully disagrees that the claim is indefinite.

Claim 424 has been amended for clarification. Amended claim 424 includes a combination of features including, but not limited to, the features of “wherein the top cover layer comprises one or more openings that allow the fluid to pass through the top cover layer to the particle.” Applicant’s Specification states:

Turning to FIG. 21 D, the second removable layers 616 and an upper portion of the spacer structures 618 are preferably removed using a wet etch process. Removal of the second removable layers leaves the top surface of the covers 614 exposed. This allows the covers to be patterned and etched such that openings 622 are formed extending through the covers. These openings 622 may be formed in the covers 614 to allow the passage of fluid through the cover layers. In one embodiment, the openings 622 are formed to allow fluid to pass through, while inhibiting displacement of the particles from the subsequently formed cavities. (Applicant’s Specification, page 52, lines 20-26).

Applicant submits that claim 424 is definite. Applicant respectfully requests removal of the rejection to the claim.

The Office Action states “[w]ith respect to claim 433, it is unclear what structural elements or modifications would be required to configure the bottom layer to support the particle rendering the claim indefinite.” Applicant respectfully disagrees that the claims are indefinite.

Claim 433 has been amended for clarification. Amended claim 433 includes a combination of features including, but not limited to, the features of “the particle is positioned on the bottom layer.” Applicant’s Specification states:

After the cavities 640 are formed, the photoresist material may be removed and particles 642 may be placed within the cavities, as depicted in FIG. 22G. The particles 642, may be inhibited from being displaced from the cavity 640 by placing cover 614 back onto the upper face 611 of the silicon substrate 610. The bottom layer 615 may also aid in inhibiting the particle 642 from being displaced from the cavity 640. Openings 622 in cover 614 and openings 623 in bottom layer

615 may allow fluid to pass through the cavity during use. (Applicant's Specification, page 55, lines 23-28)

Applicant submits that claim 433 is definite. Applicant respectfully requests removal of the rejection to the claim.

The Office Action states, "[w]ith respect to claim 443, it is unclear what structural elements or modifications would be required to configure the chamber so that it would be capable of pulling fluid through the conduit when the breakable barrier is formed." Applicant respectfully disagrees that the claim is indefinite.

Claim 443 has been amended for clarification. Amended claim 443 includes a combination of features including but not limited to, the features of "wherein the vacuum chamber comprises a breakable barrier positioned between the chamber and the conduit, and wherein the chamber applies a vacuum to the conduit when the breakable barrier is punctured." Applicant's Specification states:

As opposed to previously described methods, in which a pump is used to force a fluid stream through a sensor array, the use of a vacuum apparatus allows the fluid to be pulled through the sensor array. Referring to FIG. 39, the vacuum apparatus (F) is coupled to downstream from a sensor array. When coupled to the conduit (D), the vacuum apparatus may exert a suction force on the fluid stream, forcing a portion of the stream to pass over, and in some instances, through the sensor array. In some embodiments, the fluid may continue to pass through the conduit, after passing the sensor array, and into the vacuum apparatus. In an embodiment where the vacuum apparatus is a pre-evacuated tube, the fluid flow will continue until the air within the tube is at a pressure substantially equivalent to the atmospheric pressure. The vacuum apparatus may include a penetrable wall (H). The penetrable wall forms a seal inhibiting air from entering the vacuum apparatus. When the wall is broken or punctured, air from outside of the system will begin to enter the vacuum apparatus. In one embodiment, the conduit includes a penetrating member, (e.g., a syringe needle), which allows the penetrable wall to be pierced. Piercing the penetrable wall causes air and fluid inside the conduit to be pulled through the conduit into the vacuum apparatus until the pressure between the vacuum apparatus and the conduit is equalized. (Applicant's Specification, page 76, lines 7-22)

Applicant submits that claim 443 is definite. Applicant respectfully requests removal of the rejection to the claim.

The Office Action states, “[w]ith respect to claim 465, it is unclear what structural element would be required to configure the reservoir to deliver reagents during use, rendering the claim indefinite.” Applicant disagrees that claim 465 is indefinite.

Claim 465 has been amended for clarification. Amended claim 465 includes a combination of features including, but not limited to, the features of “a reagent delivery reservoir coupled to the sensor array via a conduit, wherein the fluid passes through the reagent delivery reservoir before entering the cavity, and wherein reagents enter the fluid as the fluid passes through the reagent delivery reservoir during use.” Applicant’s Specification states:

The sensor array may also include a reagent delivery reservoir (C). The reagent delivery system is preferably coupled to the conduit upstream from the sensor array. The reagent delivery reservoir may be formed from a porous material which includes a reagent of interest. As the fluid passes through this reservoir, a portion of the reagent within the reagent delivery reservoir passes into the fluid stream. The fluid reservoir may include a porous polymer or filter paper on which the reagent is stored. Examples of reagents which may be stored within the reagent delivery reservoir include, but are not limited to, visualization agents (e.g., dye or fluorophores), co-factors, buffers, acids, bases, oxidants, and reductants. (Applicant’s Specification, page 77, lines 4-11)

Applicant submits that claim 465 is definite. Applicant respectfully requests removal of the rejection to the claim.

The Office Action states, “[w]ith respect to claim 730, it is unclear what structural elements or modifications, would be needed to configure the microvalve to control the vacuum, rendering the claim indefinite.” Applicant respectfully disagrees that the claims are indefinite.

Claim 730 includes a combination of features including, but not limited to, the features of “a microvalve configured to control the vacuum.” Applicant’s Specification states:

In another embodiment, a microvalve may be used to control the application of a vacuum to the system. For example, a microvalve may be positioned adjacent to the vacuum apparatus. The activation of the microvalve may allow the vacuum apparatus to communicate with the conduit or sensor array. The microvalve may be remotely activated at controlled times and for controlled intervals. (Applicant's Specification, page 77, line 27-page 78, line1)

Applicant submits that claim 730 is definite. Applicant respectfully requests removal of the rejection to the claim.

D. The Claims Are Not Anticipated by Wang Pursuant to 35 U.S.C. § 102(e)

Claims 413, 431, 432, 490, and 726 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,922,617 to Wang et al. ("Wang"). Applicant submits that the claims are patentable over Wang.

The standard for "anticipation" is one of fairly strict identity. To anticipate a claim of a patent, a single prior source must contain all the claimed essential elements. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 231 U.S.P.Q. 81, 91 (Fed. Cir. 1986); *In re Donahue*, 766 F.2d 531, 226 U.S.P.Q. 619, 621 (Fed. Cir. 1985).

The Office Action states "Wang et al a microarray comprising particles...located on a substrate that can have channels with beveled openings, on which particles are located...Wang et al also teach that a vacuum is applied to the channels to keep the particles in position." Applicant respectfully submits that Wang does not teach all the features of the claims.

Amended claims 413 and 490 include a combination of features including, but not limited to, the features of "a vacuum apparatus at least partially incorporated into the supporting member, wherein the vacuum apparatus is coupled to the cavity, and wherein the vacuum apparatus produces a vacuum in the cavity such that the produced vacuum pulls fluid through the cavity during use." Amended claim 726 includes a combination of features including, but not limited to, the features of "a vacuum at least partially incorporated into the supporting member,

wherein the vacuum is coupled to the cavity, and wherein the vacuum produces a vacuum in the cavity such that the produced vacuum pulls fluid through the cavity during use.” Support for the amendment may be found at least on page 81, lines 20-22, which recites:

[i]n another embodiment, the vacuum apparatus may be formed directly into a micromachined array. The vacuum apparatus may be configured to transmit fluid to and from a single cavity or a plurality of cavities. (Applicant’s Specification, page 81, lines 20-22).

Further support for the amendment may be found at least on page 25, lines 15-21 of the instant specification, which recites:

The optical detectors may be coupled to a microprocessor to allow evaluation of fluids without the use of separate detecting components. Additionally, the fluid delivery system may also be incorporated into the supporting member. Micro-pumps and micro-valves may also be incorporated into the silicon wafer to aid passage of the fluid through the cavities. Integration of detectors and a fluid delivery system into the supporting member may allow the formation of a compact and portable analyte sensing system. (Applicant’s Specification, page 25, lines 15-21).

Wang states:

A portion of a porous solid substrate 32 is shown having channels 34, which channels 34 have beveled openings 36 into which particles may conveniently rest. The porous solid substrate 32 is loaded with particles 38, by drawing a vacuum in one or more channels 34. By being able to differentially provide a vacuum in an individual channel, one can direct a particle to that channel. The beveled openings 36 accommodate a single particle and when all the beveled openings 36 are filled with particles, one can maintain the vacuum to keep the particles in position during the assay. (Wang, column 13, lines 44-53).

Wang does not appear to teach or suggest a vacuum apparatus at least partially incorporated into the supporting member. Wang appears to teach beads bound to specific sites and grooves to retain beads. Wang also appears to teach drawing a vacuum in a channel of the substrate. Wang appears to teach that by drawing a vacuum in a channel particles can be positioned in the substrate and kept in position. Wang appears to teach applying a vacuum to a substrate to position beads in the substrate. Wang does not appear to teach or suggest a vacuum or vacuum apparatus at least partially incorporated into the supporting member that produces a

vacuum in a cavity and pulls fluid through a cavity during use. Applicant submits the cited art does not appear to teach or suggest at least the quoted features of the claims. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 431 in view of Wang. Claim 431 includes the feature of “wherein the cavity is substantially tapered such that the width of the cavity narrows in a direction from a top surface of the supporting member toward a bottom surface of the supporting member, and wherein a minimum width of the cavity is substantially less than a width of the particle” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 431 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 432 in view of Wang. Claim 432 includes the feature of “wherein a width of a bottom portion of the cavity is substantially less than a width of a top portion of the cavity, and wherein the width of the bottom portion of the cavity is substantially less than a width of the particle” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 431 in combination with the features of claims 413 and 425.

D. The Claims Are Not Anticipated by Pfof Pursuant to 35 U.S.C. § 102(e)

Claims 413-416, 418-430, 433-435, 439, 444, 459-461, 465, 466, 490-492, 726, and 730 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,485,690 to Pfof et al. (“Pfof”). Applicant submits that the claims are patentable over Pfof.

The Office Action states:

Pfof et al teach a multiple fluid sample processor comprising a multi-layered fluidic array having microtiter scale reservoirs, connecting microchannels, and sub-microtiter reaction or assay wells...where lower well plate comprises a plurality of wells used to hold reagents, solid supports, particles and/or other materials.

Amended claims 413 and 490 include a combination of features including, but not limited to, the features of “a vacuum apparatus at least partially incorporated into the supporting member.” Amended claim 726 includes a combination of features including, but not limited to, the features of “a vacuum at least partially incorporated into the supporting member.” Applicant submits that Pfof does not appear to teach all the features of the claims.

Pfof states:

The pressure system can also be used to assist in draining and evacuation of excess reagents and wash solvents frolic the channels and wells, although a vacuum system could be utilized for the same purpose. As shown in FIG. 9, pumping mechanisms 40 and 42, which can be of any conventional type, are used to pressurize the fluid sample processor. (Pfof, column 6, lines 49-53); and

Initially, the openings 20' are sealed with sealing members 29. The sealing members have self-sealing openings which allow the entry of probes or pipettes in order to allow materials to be introduced into the chip member 10'. As shown in FIG. 11, a liquid distribution member 33 is positioned on the chip member 10' and probes 35 are used to insert a liquid, such as a reagent, into openings 20'. Then by capillary forces or low pressure pumping, the reagent fills the row or column channel 26', as shown in FIG. 12. If the fluid levels in the two reservoirs do not equalize, then differential pressures may be applied to equalize fluid deliveries. (Pfof, column 7, line 60 – column 8, line 5).

Pfof appears to teach a vacuum system attached to the fluid sample processor. Pfof does not appear to teach or suggest a vacuum or vacuum apparatus at least partially incorporated into the support member. Applicant submits that Pfof does not appear to teach or suggest all the features of the claims. Applicant respectfully requests removal of the rejections to independent claims 413, 490, and 726 and the claims dependent thereon.

The Office Action included a rejection of claim 444 in view of Pfof. Claim 444 includes the feature of “wherein the vacuum apparatus comprises a vacuum pump” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 444 in combination with the features of claim 413.

The Office Action included a rejection of claim 414 in view of Pfo. Claim 414 includes the feature of “wherein the system comprises a plurality of particles positioned within a plurality of cavities, and wherein at least a first part of the plurality of particles is adapted to detect at least one analyte, and wherein the analyte that is detected by the portion of the plurality of particles is not detected by second part of the plurality of particles” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 414 in combination with the features of claim 413.

The Office Action included a rejection of claim 415 in view of Pfo. Claim 415 includes the feature of “wherein the vacuum apparatus comprises a vacuum pump” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 415 in combination with the features of claim 413.

The Office Action included a rejection of claim 416 in view of Pfo. Claim 416 includes the feature of “wherein the light source comprises a light emitting diode” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 416 in combination with the features of claim 413.

The Office Action included a rejection of claim 418 in view of Pfo. Claim 418 includes the feature of “wherein the sensor array further comprises a bottom layer and a top cover layer, wherein the bottom layer is positioned below a bottom surface of the supporting member, and wherein the top cover layer is positioned above the upper surface of the supporting member, and wherein the bottom layer and the top cover layer are positioned such that the particle is substantially contained within the cavity by the bottom layer and the top cover layer” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 418 in combination with the features of claim 413.

The Office Action included a rejection of claim 419 in view of Pfo. Claim 419 includes the feature of “wherein the bottom layer and the top cover layer are substantially transparent to light produced by the light source” in combination with the features of claim 413. Applicant

respectfully submits that the cited art does not teach or suggest the features in claim 419 in combination with the features of claim 413.

The Office Action included a rejection of claim 420 in view of Pfo. Claim 420 includes the feature of “wherein the sensor array further comprises a bottom layer and a top cover layer, wherein the bottom layer is coupled to a bottom surface of the supporting member, and wherein the top cover layer is coupled to a top surface of the supporting member; and wherein both the bottom layer and the top cover layer are coupled to the supporting member such that the particle is substantially contained within the cavity by bottom layer and the top cover layer” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 420 in combination with the features of claim 413.

The Office Action included a rejection of claim 421 in view of Pfo. Claim 421 includes the feature of “wherein the bottom layer and the top cover layer are substantially transparent to light produced by the light source” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 421 in combination with the features of claim 413.

The Office Action included a rejection of claim 422 in view of Pfo. Claim 422 includes the feature of “wherein the sensor array further comprises a bottom layer coupled to the supporting member, and wherein the supporting member comprises silicon, and wherein the bottom layer comprises silicon nitride” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 422 in combination with the features of claim 413.

The Office Action included a rejection of claim 423 in view of Pfo. Claim 423 includes the feature of “a conduit coupled to the sensor array, wherein the conduit is configured to conduct the fluid sample to and away from the sensor array” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 423 in combination with the features of claim 413.

The Office Action included a rejection of claim 424 in view of Ppost. Claim 424 includes the feature of “wherein the supporting member is formed from a plastic material, and wherein the sensor array further comprises a top cover layer, the top cover layer being coupled to the supporting member such that the particle is substantially contained within the cavity, and wherein the top cover layer comprises one or more openings that allow the fluid to pass through the top cover layer to the particle, and wherein both the supporting member and the top cover layer are substantially transparent to light produced by the light source” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 424 in combination with the features of claim 413.

The Office Action included a rejection of claim 425 in view of Ppost. Claim 425 includes the feature of “wherein the cavities are configured to allow the fluid to pass through the supporting member during use” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 425 in combination with the features of claim 413.

The Office Action included a rejection of claim 426 in view of Ppost. Claim 426 includes the feature of “wherein the cavity is configured to substantially contain the particle” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 426 in combination with the features of claim 413.

The Office Action included a rejection of claim 427 in view of Ppost. Claim 427 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein the cover layer and the bottom layer are removable” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 427 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 428 in view of Ppost. Claim 428 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the

supporting member, wherein the cover layer and the bottom layer are removable, and wherein the cover layer and the bottom layer include openings that are substantially aligned with the cavities during use” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 428 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 429 in view of Pfof. Claim 429 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein the bottom layer is coupled to a bottom surface of the supporting member and wherein the cover layer is removable, and wherein the cover layer and the bottom layer include openings that are substantially aligned with the cavities during use” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 421 in combination with the features of claim 429.

The Office Action included a rejection of claim 430 in view of Pfof. Claim 430 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein an opening is formed in the cover layer substantially aligned with the cavity, and wherein an opening is formed in the bottom layer substantially aligned with the cavity” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 430 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 433 in view of Pfof. Claim 433 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein the particle is positioned on the bottom layer, and wherein an opening is formed in the cover layer substantially aligned with the cavity” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 433 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 434 in view of Pfo. Claim 434 includes the feature of “wherein the supporting member comprises a dry film photoresist material” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 434 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 435 in view of Pfo. Claim 435 includes the feature of “wherein the supporting member comprises a plurality of layers of a dry film photoresist material” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 435 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 439 in view of Pfo. Claim 439 includes the feature of “wherein the detector comprises a fluorescence detector” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 439 in combination with the features of claim 413.

The Office Action included a rejection of claim 459 in view of Pfo. Claim 459 includes the feature of “wherein the analyte comprises phosphate functional groups, and wherein the particle is adapted to produce the signal in the presence of the phosphate functional groups” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 459 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 460 in view of Pfo. Claim 460 includes the feature of “wherein the analyte comprises bacteria, and wherein the particle is configured to produce the signal in the presence of the bacteria” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 460 in combination with the features of claim 413.

The Office Action included a rejection of claim 461 in view of Pfo. Claim 461 includes the feature of “wherein the system comprises a plurality of particles positioned within a plurality of cavities, and wherein the plurality of particles produce a detectable pattern in the presence of the analyte” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 461 in combination with the features of claim 413.

The Office Action included a rejection of claim 465 in view of Pfo. Claim 465 includes the feature of “a reagent delivery reservoir coupled to the sensor array via a conduit, wherein the fluid passes through the reagent delivery reservoir before entering the cavity, and wherein reagents enter the fluid as the fluid passes through the reagent delivery reservoir during use” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 465 in combination with the features of claim 413.

The Office Action included a rejection of claim 466 in view of Pfo. Claim 466 includes the feature of “wherein the reagent delivery reservoir comprises an indicator” in combination with the features of claims 413 and 465. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 466 in combination with the features of claims 413 and 465.

The Office Action included a rejection of claim 491 in view of Pfo. Claim 491 includes the feature of “wherein the system comprises a plurality of particles positioned in a plurality of cavities, and wherein at least a first part of the plurality of particles is adapted to detect at least one analyte, and wherein the analyte that is detected by the portion of the plurality of particles is not detected by second part of the plurality of particles” in combination with the features of claim 490. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 491 in combination with the features of claim 490.

The Office Action included a rejection of claim 492 in view of Pfo. Claim 492 includes the feature of “wherein the system comprises a plurality of particles positioned in the cavity” in

combination with the features of claim 490. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 492 in combination with the features of claim 490.

The Office Action included a rejection of claim 730 in view of Pfof. Claim 730 includes the feature of “a microvalve configured to control the vacuum” in combination with the features of claim 726. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 730 in combination with the features of claim 726.

E. The Claims Are Patentable Over Lavigne In View of Pfof Pursuant to 35 U.S.C. § 103(a)

Claims 413-433, 437, 439-442, 444-451, 455, 459-461, 465, 466, 490-492, 726, and 730 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lavigne et al, J. Am. Chem. Soc. 1998, 120, 6429-6430 (“Lavigne”) in view of Pfof. Applicant respectfully disagrees that the claims are unpatentable over Lavigne in view of Pfof.

Applicant submits that Lavigne in view of Pfof does not appear to teach or suggest all the features of the claims. Amended claims 413 and 490 include a combination of features including, but not limited to, the features of “a vacuum apparatus at least partially incorporated into the supporting member.” Amended claim 726 includes a combination of features including, but not limited to, the features of “a vacuum at least partially incorporated into the supporting member.”

The Office Action states, “Lavigne et al do not teach a vacuum apparatus.” (Office Action, page 8). Pfof states:

The pressure system can also be used to assist in draining and evacuation of excess reagents and wash solvents frolic the channels and wells, although a vacuum system could be utilized for the same purpose. As shown in FIG. 9, pumping mechanisms 40 and 42, which can be of any convential type, are used to pressurize the fluid sample processor. (Pfof, column 6, lines 49-53); and

Initially, the openings 20' are sealed with sealing members 29. The sealing members have self-sealing openings which allow the entry of probes or pipettes in order to allow materials to be introduced into the chip member 10'. As shown in FIG. 11, a liquid distribution member 33 is positioned on the chip member 10' and probes 35 are used to insert a liquid, such as a reagent, into openings 20'. Then by capillary forces or low pressure pumping, the reagent fills the row or column channel 26', as shown in FIG. 12. If the fluid levels in the two reservoirs do not equalize, then differential pressures may be applied to equalize fluid deliveries. (Pfof, column 7, line 60 – column 8, line 5).

Pfof appears to teach a vacuum system attached to the fluid sample processor. Pfof does not appear to teach or suggest a vacuum or vacuum apparatus at least partially incorporated into the support member. Lavigne and Pfof do not appear to teach or suggest a vacuum system at least partially incorporated into the supporting member. Applicant submits that Lavigne in view of Pfof do not appear to teach or suggest all the features of the claims. Applicant respectfully requests removal of the rejections to independent claims 413, 490, and 726 and the claims dependent thereon.

The Office Action included a rejection of claim 414 in view of Lavigne and Pfof. Claim 414 includes the feature of “wherein the system comprises a plurality of particles positioned within a plurality of cavities, and wherein at least a first part of the plurality of particles is adapted to detect at least one analyte, and wherein the analyte that is detected by the portion of the plurality of particles is not detected by second part of the plurality of particles” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 414 in combination with the features of claim 413.

The Office Action included a rejection of claim 415 in view of Lavigne and Pfof. Claim 415 includes the feature of “wherein the system comprises a plurality of particles positioned in the cavity” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 415 in combination with the features of claim 413.

The Office Action included a rejection of claim 416 in view of Lavigne and Pfof. Claim 416 includes the feature of “wherein the light source comprises a light emitting diode” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 416 in combination with the features of claim 413.

The Office Action included a rejection of claim 417 in view of Lavigne and Pfof. Claim 417 includes the feature of “wherein the light source comprises a white light source” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 417 in combination with the features of claim 413.

The Office Action included a rejection of claim 418 in view of Lavigne and Pfof. Claim 418 includes the feature of “wherein the sensor array further comprises a bottom layer and a top cover layer, wherein the bottom layer is positioned below a bottom surface of the supporting member, and wherein the top cover layer is positioned above the upper surface of the supporting member, and wherein the bottom layer and the top cover layer are positioned such that the particle is substantially contained within the cavity by the bottom layer and the top cover layer” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 418 in combination with the features of claim 413.

The Office Action included a rejection of claim 419 in view of Lavigne and Pfof. Claim 419 includes the feature of “wherein the bottom layer and the top cover layer are substantially transparent to light produced by the light source” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 419 in combination with the features of claim 413.

The Office Action included a rejection of claim 420 in view of Lavigne and Pfof. Claim 420 includes the feature of “wherein the sensor array further comprises a bottom layer and a top cover layer, wherein the bottom layer is coupled to a bottom surface of the supporting member, and wherein the top cover layer is coupled to a top surface of the supporting member; and wherein both the bottom layer and the top cover layer are coupled to the supporting member such

that the particle is substantially contained within the cavity by bottom layer and the top cover layer” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 420 in combination with the features of claim 413.

The Office Action included a rejection of claim 421 in view of Lavigne and Pfof. Claim 421 includes the feature of “wherein the bottom layer and the top cover layer are substantially transparent to light produced by the light source” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 421 in combination with the features of claim 413.

The Office Action included a rejection of claim 422 in view of Lavigne and Pfof. Claim 422 includes the feature of “wherein the sensor array further comprises a bottom layer coupled to the supporting member, and wherein the supporting member comprises silicon, and wherein the bottom layer comprises silicon nitride” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 422 in combination with the features of claim 413.

The Office Action included a rejection of claim 423 in view of Lavigne and Pfof. Claim 423 includes the feature of “a conduit coupled to the sensor array, wherein the conduit is configured to conduct the fluid sample to and away from the sensor array” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 423 in combination with the features of claim 413.

The Office Action included a rejection of claim 424 in view of Lavigne and Pfof. Claim 424 includes the feature of “wherein the supporting member is formed from a plastic material, and wherein the sensor array further comprises a top cover layer, the top cover layer being coupled to the supporting member such that the particle is substantially contained within the cavity, and wherein the top cover layer comprises one or more openings that allow the fluid to pass through the top cover layer to the particle, and wherein both the supporting member and the

top cover layer are substantially transparent to light produced by the light source” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 424 in combination with the features of claim 413.

The Office Action included a rejection of claim 425 in view of Lavigne and Pfof. Claim 425 includes the feature of “wherein the cavities are configured to allow the fluid to pass through the supporting member during use” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 425 in combination with the features of claim 413.

The Office Action included a rejection of claim 426 in view of Lavigne and Pfof. Claim 426 includes the feature of “wherein the cavity is configured to substantially contain the particle” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 426 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 427 in view of Lavigne and Pfof. Claim 427 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein the cover layer and the bottom layer are removable” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 427 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 428 in view of Lavigne and Pfof. Claim 428 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein the cover layer and the bottom layer are removable, and wherein the cover layer and the bottom layer include openings that are substantially aligned with the cavities during use” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 428 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 429 in view of Lavigne and Pfof. Claim 429 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein the bottom layer is coupled to a bottom surface of the supporting member and wherein the cover layer is removable, and wherein the cover layer and the bottom layer include openings that are substantially aligned with the cavities during use” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 429 in combination with the features of claim 413.

The Office Action included a rejection of claim 430 in view of Lavigne and Pfof. Claim 430 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein an opening is formed in the cover layer substantially aligned with the cavity, and wherein an opening is formed in the bottom layer substantially aligned with the cavity” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 430 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 431 in view of Lavigne and Pfof. Claim 431 includes the feature of “wherein the cavity is substantially tapered such that the width of the cavity narrows in a direction from a top surface of the supporting member toward a bottom surface of the supporting member, and wherein a minimum width of the cavity is substantially less than a width of the particle” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 431 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 432 in view of Lavigne and Pfof. Claim 432 includes the feature of “wherein a width of a bottom portion of the cavity is substantially less than a width of a top portion of the cavity, and wherein the width of the bottom portion of the cavity is substantially less than a width of the particle” in combination with the features of claims

413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 432 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 433 in view of Lavigne and Pfof. Claim 433 includes the feature of “a cover layer coupled to the supporting member and a bottom layer coupled to the supporting member, wherein the particle is positioned on the bottom layer, and wherein an opening is formed in the cover layer substantially aligned with the cavity” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 433 in combination with the features of claims 413 and 425.

The Office Action included a rejection of claim 437 in view of Pfof. Claim 437 includes the feature of “wherein the detector comprises a charge-coupled device” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 437 in combination with the features of claim 413.

The Office Action included a rejection of claim 439 in view of Lavigne and Pfof. Claim 439 includes the feature of “wherein the detector comprises a fluorescence detector” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 439 in combination with the features of claim 413.

The Office Action included a rejection of claim 440 in view of Pfof. Claim 440 includes the feature of “wherein the detector comprises a semiconductor based photodetector, and wherein the detector is coupled to the sensor array” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 440 in combination with the features of claim 413.

The Office Action included a rejection of claim 441 in view of Lavigne and Pfof. Claim 441 includes the feature of “wherein the particle ranges from about 0.05 micron to about 500 microns” in combination with the features of claim 413. Applicant respectfully submits that the

cited art does not teach or suggest the features in claim 441 in combination with the features of claim 413.

The Office Action included a rejection of claim 442 in view of Lavigne and Pfof. Claim 442 includes the feature of “wherein a volume of the particle changes when contacted with the fluid” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 442 in combination with the features of claim 413.

The Office Action included a rejection of claim 444 in view of Lavigne and Pfof. Claim 444 includes the feature of “wherein the vacuum apparatus comprises a vacuum pump” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 444 in combination with the features of claim 413.

The Office Action included a rejection of claim 445 in view of Lavigne and Pfof. Claim 445 includes the feature of “wherein the particle comprises a receptor molecule coupled to a polymeric resin” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 445 in combination with the features of claim 413.

The Office Action included a rejection of claim 446 in view of Lavigne and Pfof. Claim 446 includes the feature of “wherein the polymeric resin comprises polystyrene-polyethylene glycol-divinyl benzene” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 446 in combination with the features of claim 413.

The Office Action included a rejection of claim 447 in view of Lavigne and Pfof. Claim 447 includes the feature of “wherein the receptor molecule produces the signal in response to the pH of the fluid” in combination with the features of claims 413 and 446. Applicant respectfully

submits that the cited art does not teach or suggest the features in claim 447 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 448 in view of Lavigne and Pfof. Claim 448 includes the feature of “wherein the analyte comprises a metal ion, and wherein the receptor produces the signal in response to the presence of the metal ion” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 448 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 449 in view of Lavigne and Pfof. Claim 449 includes the feature of “wherein the analyte comprises a carbohydrate, and wherein the receptor produces a signal in response to the presence of a carbohydrate” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 449 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 450 in view of Lavigne and Pfof. Claim 450 includes the feature of “wherein the particle further comprises a first indicator and a second indicator, the first and second indicators being coupled to the receptor, wherein the interaction of the receptor with the analyte causes the first and second indicators to interact such that the signal is produced” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 450 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 451 in view of Lavigne and Pfof. Claim 451 includes the feature of “wherein the particle further comprises an indicator, wherein the indicator is associated with the receptor such that in the presence of the analyte the indicator is displaced from the receptor to produce the signal” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 451 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 455 in view of Lavigne and Pfof. Claim 455 includes the feature of “wherein the receptor comprises a synthetic receptor” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 455 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 459 in view of Lavigne and Pfof. Claim 459 includes the feature of “wherein the analyte comprises phosphate functional groups, and wherein the particle is adapted to produce the signal in the presence of the phosphate functional groups” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 459 in combination with the features of claims 413 and 446.

The Office Action included a rejection of claim 460 in view of Lavigne and Pfof. Claim 460 includes the feature of “wherein the analyte comprises bacteria, and wherein the particle produces the signal in the presence of the bacteria” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 460 in combination with the features of claim 413.

The Office Action included a rejection of claim 461 in view of Lavigne and Pfof. Claim 461 includes the feature of “wherein the system comprises a plurality of particles positioned within a plurality of cavities, and wherein the plurality of particles produce a detectable pattern in the presence of the analyte” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 461 in combination with the features of claim 413.

The Office Action included a rejection of claim 465 in view of Lavigne and Pfof. Claim 449 includes the feature of “a reagent delivery reservoir coupled to the sensor array via a conduit, wherein the fluid passes through the reagent delivery reservoir before entering the cavity, and wherein reagents enter the fluid as the fluid passes through the reagent delivery reservoir during

use” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 465 in combination with the features of claim 413.

The Office Action included a rejection of claim 466 in view of Lavigne and Pfof. Claim 466 includes the feature of “wherein the reagent delivery reservoir comprises an indicator” in combination with the features of claims 413 and 465. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 466 in combination with the features of claims 413 and 465.

The Office Action included a rejection of claim 491 in view of Lavigne and Pfof. Claim 491 includes the feature of “wherein the system comprises a plurality of particles positioned in a plurality of cavities, and wherein at least a first part of the plurality of particles is adapted to detect at least one analyte, and wherein the analyte that is detected by the portion of the plurality of particles is not detected by second part of the plurality of particles” in combination with the features of claim 490. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 491 in combination with the features of claim 490.

The Office Action included a rejection of claim 492 in view of Lavigne and Pfof. Claim 492 includes the feature of “wherein the system comprises a plurality of particles positioned in the cavity” in combination with the features of claim 490. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 492 in combination with the features of claim 490.

The Office Action included a rejection of claim 730 in view of Lavigne and Pfof. Claim 730 includes the feature of “a microvalve configured to control the vacuum” in combination with the features of claim 726. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 730 in combination with the features of claim 426.

F. The Claims Are Patentable Over Lavigne In View of Pfof And In Further View Of Bogart Pursuant to 35 U.S.C. § 103(a)

Claim 436 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lavigne in view of Pfof and in further view of U.S. Patent No. 5,541,057 to Bogart et al. (“Bogart”). Applicant respectfully disagrees that the claims are unpatentable over Lavigne in view of Pfof and in further view of Bogart.

The Office Action included a rejection of claim 436 in view of Lavigne, Pfof, and Bogart. Claim 436 includes the feature of “wherein an inner surface of the cavity is coated with a reflective material” in combination with the features of claims 413 and 425. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 436 in combination with the features of claims 413 and 425. Applicant respectfully requests removal of the rejection to the claims.

G. The Claims Are Patentable Over Lavigne In View of Pfof And In Further View Of Walt Pursuant to 35 U.S.C. § 103(a)

Claim 438 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lavigne in view of Pfof and in further view of U.S. Patent No. 6,023,540 to Walt et al. (“Walt”). Applicant respectfully disagrees that the claims are unpatentable over Lavigne in view of Pfof and in further view of Walt.

The Office Action included a rejection of claim 438 in view of Lavigne, Pfof, and Walt. Claim 438 includes the feature of “wherein the detector comprises an ultraviolet detector.” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 438 in combination with the features of claim 413. Applicant respectfully requests removal of the rejection to the claims.

H. The Claims Are Patentable Over Lavigne In View of Pfof And In Further View Of Fernwood Pursuant to 35 U.S.C. § 103(a)

Claims 462-464 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lavigne in view of Pfof and in further view of U.S. Patent No. 4,493,815 to Fernwood et al. (“Fernwood”). Applicant respectfully disagrees that the claims are unpatentable over Lavigne in view of Pfof and in further view of Fernwood.

The Office Action included a rejection of claim 462 in view of Lavigne, Pfof, and Fernwood. Claim 462 includes the feature of “a filter coupled to the conduit and the sensor array, wherein the fluid passes through the filter before reaching the sensor array” in combination with the features of claim 413. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 462 in combination with the features of claim 413. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 463 in view of Lavigne, Pfof, and Fernwood. Claim 463 includes the feature of “wherein the fluid is a blood sample, and wherein the filter comprises a membrane for the removal of particulates” in combination with the features of claims 413 and 462. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 463 in combination with the features of claims 413 and 462. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 464 in view of Lavigne, Pfof, and Fernwood. Claim 464 includes the feature of “wherein the fluid is a blood sample, and wherein the filter comprises a membrane for removal of white and red blood cells from the blood” in combination with the features of claims 413 and 462. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 464 in combination with the features of claims 413 and 462. Applicant respectfully requests removal of the rejection to the claims.

I. The Claims Are Patentable Over Lavigne In View of Pfof And In Further View Of Wang Pursuant to 35 U.S.C. § 103(a)

Claims 452-458 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lavigne in view of Pfof and in further view of Wang. Applicant respectfully disagrees that the claims are unpatentable over Lavigne in view of Pfof and in further view of Wang.

The Office Action included a rejection of claim 452 in view of Lavigne, Pfof, and Wang. Claim 452 includes the feature of “wherein the receptor comprises a polynucleotide” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 452 in combination with the features of claims 413 and 446. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 453 in view of Lavigne, Pfof, and Wang. Claim 453 includes the feature of “wherein the receptor comprises a peptide” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 453 in combination with the features of claims 413 and 446. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 454 in view of Lavigne, Pfof, and Wang. Claim 454 includes the feature of “wherein the receptor comprises an enzyme” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 454 in combination with the features of claims 413 and 446. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 455 in view of Lavigne, Pfof, and Wang. Claim 455 includes the feature of “wherein the receptor comprises a synthetic receptor” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 455 in combination with the features of claims 413 and 446. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 456 in view of Lavigne, Pfost, and Wang. Claim 456 includes the feature of “wherein the receptor comprises an unnatural biopolymer” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 456 in combination with the features of claims 413 and 446. Applicant respectfully requests removal of the rejection to the claims.

The Office Action included a rejection of claim 457 in view of Lavigne, Pfost, and Wang. Claim 457 includes the feature of “wherein the receptor comprises an antibody” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 457 in combination with the features of claims 413 and 446. Applicant respectfully requests removal of the rejection to the claims.

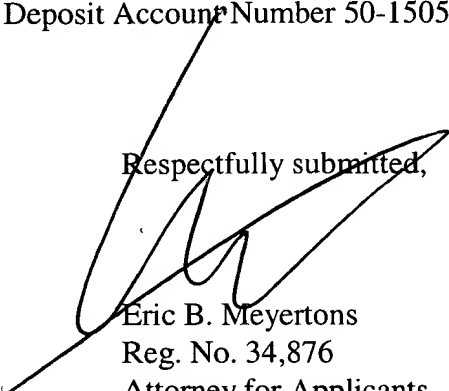
The Office Action included a rejection of claim 458 in view of Lavigne, Pfost, and Wang. Claim 458 includes the feature of “wherein the receptor comprises an antigen” in combination with the features of claims 413 and 446. Applicant respectfully submits that the cited art does not teach or suggest the features in claim 458 in combination with the features of claims 413 and 446. Applicant respectfully requests removal of the rejection to the claims.

J. Additional Comments

Applicant submits that all claims are in condition for allowance. Favorable reconsideration is respectfully requested.

Applicant requests a one-month extension of time. A Fee Authorization for the Terminal Disclaimer fee and one month extension fee is enclosed. If any additional extension of time is required, Applicant hereby requests the appropriate extension of time. If any additional fees are required or if any fees have been overpaid, please appropriately charge or credit those fees to Meyertons, Hood, Kivlin, Kowert & Goetzel, P.C. Deposit Account Number 50-1505/5936-00517/EBM.

Respectfully submitted,


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